

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	:	Alex L. Chan, et al.
	:	
For	:	SHARED VIA DECOUPLING FOR AREA ARRAYS COMPONENTS
	:	
Serial No.:	:	10/761,343
	:	
Filed	:	January 22, 2004
	:	
Art Unit	:	2841
	:	
Examiner	:	Hoa Cao Nguyen
	:	
Att. Docket	:	ALC 3113
	:	
Confirmation No.	:	3273

APPEAL BRIEF

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Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed February 21, 2008.

I. REAL PARTY IN INTEREST

The party in interest is ALCATEL, by way of an Assignment recorded at Reel 014911, frame 0349.

II. RELATED APPEALS AND INTERFERENCES

Following are identified any prior or pending appeals, interferences or judicial proceedings, known to Appellant, Appellant's representative, or the Assignee, that may be related to, or which will directly affect or be directly affected by or have a bearing upon the Board's decision in the pending appeal:

NONE.

III. STATUS OF CLAIMS

Claims 1-6 and 9-12 are on appeal.

Claims 1-6 and 9-13 are pending.

No claims are allowed.

Claims 1-6 and 9-12 are rejected.

Claims 7 and 8 are canceled.

Claim 13 is withdrawn.

IV. STATUS OF AMENDMENTS

All Amendments have been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The subject matter recited in claim 1 relates to a printed wiring board (PWB) (*see* [009]) for mounting a high performance ball grid array (BGA) device (*see* [0028]-[0029]) on one side of said PWB, comprising: a modified vias array, the modification being that at least a portion of

one column of said vias array is missing at least two adjacent vias, wherein the missing vias have been replaced by respective shared vias in an adjacent row, and said shared vias have been connected to either a power supply or a power return; and a via pad for each said shared vias located on the other side of said PWB in said portion, whereby a decoupling capacitor can be electrically connected across said pair of via pads to decouple the power supply and the power return at said two adjacent vias. *See* [0037] to [0047]; and FIG. 3.

The subject matter of claim 2 relates to a printed wiring board (PWB) (*see* [009]) for mounting a high performance integrated circuit (*see* [0010]), comprising: on a top side of said PWB, a modified via array with BGA columns and BGA rows of ball connection pads; a modified vias array of plated through hole (PTH) vias, with each via column Col(n) arranged between two respective BGA columns c(n) and c(n+1) and each via row R(k) arranged between two respective BGA rows r(k) and r(k-1), wherein 2m vias of said via column Col(i) placed in successive via rows R(j) to R(j+2m-1) of said modified vias array are depopulated to obtain a free space on the back side of said PWB, wherein 2m corresponding vias in a via column Col(i+1) adjacent to said via column Col(i) and placed in said successive via rows R(j) to R(j+2m-1) of said vias array are shared vias, and wherein $n \geq 1$, $k \geq 2$, $2 \leq i < n$ and $j < k$. *See* [0037] to [0047]; and FIG. 3.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are presented for review:

A. Claims 2-12 are rejected under 35 U.S.C. § 112, 2nd paragraph, as allegedly being indefinite.

B. Claims 1-4 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent Publication No. 2003/0043560 to Clarkson et al. (hereinafter "Clarkson").

C. Claims 11 and 12 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Clarkson.

VII. ARGUMENT

A. Rejection of Claims 2-12 Under 35 U.S.C. §112

In section 4 on pages 2-4, the Final Office Action dated December 4, 2007, rejects claims 2-12 under 35 U.S.C. §112, 2nd paragraph, as allegedly being indefinite.

1. Claims 2, 5 and 6

The February 6, 2008, Amendment amended claims 2, 5 and 6 exactly as suggested in the rejection. Appellant respectfully submits that claims 2, 5 and 6 are definite by all applicable standards, including the basis stated in support of the rejection in the Final Office Action.

2. Claims 3, 4 and 9-12

As best understood by Appellant, claims 3, 4 and 9-12 are included in this rejection based solely on their dependence from claim 2. As such, Appellant respectfully submits that claims 3, 4 and 9-12 are definite for the reasons stated above in connection with the rejection of claim 2 as allegedly being indefinite.

3. Claims 7 and 8

The February 6, 2008, Amendment canceled claims 7 and 8 without prejudice to, or disclaimer of, the subject matter recited therein.

B. Rejection of Claims 1-4 Under 35 U.S.C. §102(b)

In section 8 on pages 4-6, the Final Office Action dated December 4, 2007, rejects claims 1-4 under 35 U.S.C. §102(e) as allegedly being anticipated by U.S. Patent Publication No. 2003/0043560 to Clarkson.

The test for anticipation under section 102 is whether each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP §2131. The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP §2131. The elements must also be arranged as required by the claim. *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990).

1. Claims 1 and 2

The rejection recharacterizes Clarkson in response to Applicant's August 30, 2007, Interview and September 10, 2007, Amendment. However, the disclosure in Clarkson relied upon in connection with rejection is the same as that relied upon in the previous Office Action. Therefore, Applicant maintains the traversal arguments articulated in Applicant's September 10, 2007, Amendment.

In particular, Claim 1 recites, in combination with other subject matter recited therein, "respective shared vias." Similarly, claim 2, from which claims 3 and 4 depend, recites, "shared vias." It is respectfully submitted that Clarkson does not disclose, teach or suggest, shared vias according to the combinations recited in independent claims 1 and 2.

For at least the foregoing reasons, claims 1 and 2 are patentable over Clarkson because Clarkson does not disclose each and every element recited in claims 1 and 2.

2. Claims 3 and 4

Claims 3 and 4 depend from claim 2 and are therefore also patentable for at least the reasons stated above in connection with claim 2, as well as for the separately patentable subject matter recited therein.

C. Rejection of Claims 11 and 12 Under 35 U.S.C. §103(a)

In section 10 on page 7, the Final Office Action dated December 4, 2007 rejects claims 11 and 12 under 35 U.S.C. §103(a) as allegedly being unpatentable over Clarkson. Claims 11 and 12 depend from claim 2 and are therefore also patentable for at least the reasons stated above in connection with the rejection of claim 2, as well as for the separately patentable subject matter recited therein.

CONCLUSION

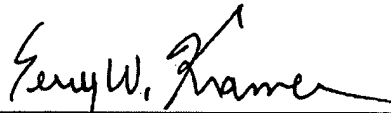
For at least the reasons discussed above, it is respectfully submitted that the rejections are in error and that Claims 1-6 and 9-12 are in condition for allowance. For at least the above reasons, Appellants respectfully request that this Honorable Board reverse the rejections of Claims 1-6 and 9-12.

Respectfully submitted,
KRAMER & AMADO, P.C.

April 21, 2008

Date

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VIII. CLAIMS APPENDIX

CLAIMS INVOLVED IN THE APPEAL:

1. A printed wiring board (PWB) for mounting a high performance ball grid array (BGA) device on one side of said PWB, comprising:

a modified vias array, the modification being that at least a portion of one column of said vias array is missing at least two adjacent vias, wherein the missing vias have been replaced by respective shared vias in an adjacent row, and said shared vias have been connected to either a power supply or a power return; and

a via pad for each said shared vias located on the other side of said PWB in said portion, whereby a decoupling capacitor can be electrically connected across said pair of via pads to decouple the power supply and the power return at said two adjacent vias.

2. A printed wiring board (PWB) for mounting a high performance integrated circuit, comprising:

on a top side of said PWB, a modified via array with BGA columns and BGA rows of ball connection pads;

a modified vias array of plated through hole (PTH) vias, with each via column $Col(n)$ arranged between two respective BGA columns $c(n)$ and $c(n+1)$ and each via row $R(k)$ arranged between two respective BGA rows $r(k)$ and $r(k-1)$,

wherein $2m$ vias of said via column $Col(i)$ placed in successive via rows $R(j)$ to $R(j+2m-1)$ of said modified vias array are depopulated to obtain a free space on the back side of said

PWB,

wherein $2m$ corresponding vias in a via column $Col(i+1)$ adjacent to said via column $Col(i)$ and placed in said successive via rows $R(j)$ to $R(j+2m-1)$ of said vias array are shared vias, and

wherein $n \geq 1$, $k \geq 2$, $2 \leq i < n$ and $j < k$.

3. The PWB of claim 2, wherein said free space has a width $D1$ equal to twice the pitch D of said vias array less a via size, for accommodating m passive elements of a substantially similar width $D1$.

4. The PWB of claim 2, wherein m is at least one.

5. The PWB of claim 2, wherein a first shared via in said via column $Col(i+1)$ and said via row $R(j)$ provides a power contact to a first associated ball contact pad in said via column $c(i+1)$ and said via row $r(j)$ and to a second associated ball contact pad in said via column $c(i+2)$ and said via row $r(j)$.

6. The PWB of claim 5, wherein a second shared via in said via column $Col(i+1)$ and said via row $R(j+1)$ provides a ground contact to a third associated ball contact pad in said via column $c(i+1)$ and said via row $r(j+1)$ and to a fourth associated ball contact pad in said via column

c(i+2) and said via row r(j).

9. The PWB of claim 2, wherein a first shared via in said via column Col(i) and said via row R(j) provides a power contact to a first associated ball contact pad in said via column c(i) and said via row r(j+1) and to a second associated ball contact pad in said via column c(i+1) and said via row r(j).

10. The PWB of claim 9, wherein a second shared via in said via column Col(i) and said via row R(j+1) provides a ground contact to a third associated ball contact pad in said c(i) and said via row r(j+2) and to a fourth associated ball contact pad in said via column c(i+1) and a via row r(j+1).

11. The PWB of claim 3, wherein said passive elements are 0603, 0402, 0201 or smaller decoupling capacitors.

12. The PWB of claim 3, wherein said passive elements are 0603, 0402, 0201 or smaller resistors.

IX. EVIDENCE APPENDIX

A copy of the following evidence 1) entered by the Examiner, including a statement setting forth where in the record the evidence was entered by the Examiner, 2) relied upon by the Appellant in the appeal, and/or 3) relied upon by the Examiner as to the grounds of rejection to be reviewed on appeal, is attached:

None.

X. RELATED PROCEEDINGS APPENDIX

Copies of relevant decisions in prior or pending appeals, interferences or judicial proceedings, known to Appellant, Appellant's representative, or the Assignee, that may be related to, or which will directly affect or be directly affected by or have a bearing upon the Board's decision in the pending appeal are attached:

None.